## AMENDMENTS TO THE CLAIMS:

1. (Currently amended) A system for controlling a permanent magnet motor (12), comprising:

a motor controller (16), said motor controller (16) using phase currents of the permanent magnet electric motor (12) at a preset speed $\omega$ to generate voltage-controlling signals ~~in relation to both~~ used to obtain changes in ~~speed $\omega$ and~~ torque T of the permanent magnet electric motor (12); and

a power stage (14), said power stage (14) receiving the voltage-controlling signals from the motor controller (16) and feeding them back to the permanent magnet electric motor (12).

2. (Original)  The system for controlling a permanent magnet electric motor (12) according to claim 1, wherein said permanent magnet electric motor (12) is a three-phase permanent magnet electric motor provided with a rotor and a stator, each one of the phases thereof carrying a current, $i_a$, $i_b$ and $i_c$ respectively.

3. (Previously presented) The system for controlling a permanent magnet electric motor according to claim 1, wherein said motor controller (16) is a park vector rotator unit that generates continuously rotating angles.

4. (Currently amended)   The system for controlling a permanent magnet electric motor according to any one of claims 1 to 3, said system continuously responding to changes of the preset speed and torque of the permanent magnet electric motor (12) as well as to changes in ambient conditions.

5. (Currently amended) A method for controlling a permanent magnet electric motor (12) comprising:

determining a current of each phase of the permanent magnet electric motor (12) at a preset speed $\omega$;

obtaining voltage controlling signals at the preset speed $\omega$ in relation to

~~both~~ changes in ~~speed and~~ torque of the permanent magnet electric motor (12); and

feeding the voltage controlling signal back to the permanent magnet electric motor (12).

6. (Currently amended) The method for controlling a permanent magnet electric motor according to claim 5, wherein said determining a current of each phase of the permanent magnet electric motor (12) comprises measuring a current of two phases thereof and calculating a current of a third phase using the relation: $\sum\limits_{three\ phases} i = 0$ ~~(4)~~.

7. (Previously presented) The method for controlling a permanent magnet electric motor according to claim 5, further comprising computing a current torque T of the permanent magnet electric motor (12).

8. (Currently amended) The method for controlling a permanent magnet electric motor according to claim 7, wherein said computing a current torque T comprises rotating the currents of each phase of the permanent magnet electric motor by an angle $-\theta_n$ to output two currents $I_d$ and $I_q$, according to the following relations on a d-q axis fixed on a rotor axis of the permanent magnet electric motor (12):

$$I_d = 2/3 \times [i_a \times \cos(\theta_n) + i_b \times \cos(\theta_n +120°) + i_c \times \cos(\theta_n -120°)]\ _{~~(2)~~}\text{ and}$$
$$I_q = 2/3 \times [i_a \times \sin(\theta_n) + i_b \times \sin(\theta_n +120°)+ i_c \times \sin(\theta_n -120°)]\ _{~~(3)~~}.$$

9. (Previously presented) The method for controlling a permanent magnet electric motor according to claim 6, wherein said obtaining voltage controlling signals comprises:

computing a current rotating angle $\theta_{n+1}$;

computing two voltage outputs $V_q$ and $V_d$; and

rotating the voltage outputs $V_q$ and $V_d$ by the angle $\theta_{n+1}$.

10. (Currently amended) The method for controlling a permanent

magnet electric motor according to claim 9, wherein said computing a current rotating angle $\theta_{n+1}$ is done using a current torque T and a ~~a~~ a preset speed $\omega$ of the permanent magnet electric motor (12) with the formula $\theta_{n+1} = \theta_n + k_1 \times \omega + k_2 \times T$ ~~(1)~~ where $k_1$ and $k_2$ are constants.

11. (Previously presented) The method for controlling a permanent magnet electric motor according claim 10, wherein said computing two voltage outputs $V_q$ and $V_d$ comprises:

computing the voltage output $V_q$ on a d-q axis fixed on a rotor axis: $V_q = PI (I^* - I_d) + k_3 \times I_q$ where $k_3$ is a constant, "PI" referring to a proportional and integral operator, defined as follows: $PI(x) = ax + b\int x\, dt$ where a and b are constants and integration is over time; and

computing the voltage output $V_d$, according to the following equation on the d-q axis fixed on the rotor axis: $V_d = k_5 \times I_d + k_4 \times I_q \times \omega$ where $k_4$ and $k_5$ are constants.

12. (Previously presented) The method for controlling a permanent magnet electric motor according to claim 10, wherein said obtaining voltage controlling signals comprises obtaining three voltage controlling signals $V_a$, $V_b$ and $V_c$ according to the following equations: $V_a = V_d \times \cos(\theta_{n+1}) + V_q \times \sin(\theta_{n+1})$, $V_b = V_d \times \cos(\theta_{n+1}+120°) + V_q \times \sin(\theta_{n+1}+120°)$ and $V_c = V_d \times \cos(\theta_{n+1}-120°) + V_q \times \sin(\theta_{n+1}-120°)$.

13. (Previously presented) The method for controlling a permanent magnet electric motor according to claim 5, wherein constants are set based on a number of parameters selected in the group comprising a sampling rate of a computer to be used, conditions of a power drive, sensitivity of current sensors used for current measurements and characteristics of the permanent magnet electric motor (12).

14. (Currently amended) A circuit for controlling a permanent magnet

three-phases electric motor provided with a rotor and a stator, comprising:

a rotator allowing rotation of current signals of the phases of the permanent magnet electric motor (12) from a stationary frame to two decoupled current components in a rotor synchronous frame along a direct axis ($I_d$) and a quadrature axis ($I_q$) respectively;

a proportional and integral operator for deriving a voltage ($V_q$) along the quadrature axis and a voltage ($V_d$) along the direct axis;

a rotator allowing rotating the voltages $V_q$ and $V_d$ back from the rotor synchronous frame to the stationary frame to yield terminal voltages $V_a$, $V_b$ and $V_c$ of the permanent magnet electric motor;

wherein a current rotating angle $\theta_{n+1}$ is computed using a current torque T and a preset speed $\omega$ of the permanent magnet electric motor with a formula as follows: $\theta_{n+1} = \theta_n + k_1 \times \omega + k_2 \times T$ (t) where $k_1$ and $k_2$ are constants.

15. (Currently amended) A method for controlling a permanent magnet three-phases electric motor provided with a rotor and a stator, comprising:

rotating current signals of the phases of the permanent magnet electric motor (12) from a stationary frame to two decoupled current components in a rotor synchronous frame along a direct axis ($I_d$) and a quadrature axis ($I_q$) respectively;

deriving a voltage ($V_q$) along the quadrature axis therefrom;

deriving a voltage ($V_d$) along the direct axis;

rotating the voltages $V_q$ and $V_d$ back from the rotor synchronous frame to the stationary frame to yield terminal voltages $V_a$, $V_b$ and $V_c$ of the permanent magnet electric motor;

wherein a current rotating angle $\theta_{n+1}$ is computed using a current torque T and a preset speed $\omega$ of the permanent magnet electric motor (12) with a formula as follows: $\theta_{n+1} = \theta_n + k_1 \times \omega + k_2 \times T$ (t) where $k_1$ and $k_2$ are constants.

16. (Currently amended) A method for controlling a permanent magnet electric motor having three-phases each supporting a current $i_a$, $i_b$ and $i_c$ respectively, comprising:

determining the currents $i_a$, $i_b$ and $i_c$;

rotating the currents $i_a$, $i_b$ and $i_c$ by an angle $-\theta_n$ to yield currents $I_d$ and $I_q$;

computing a current torque of the permanent magnet electric motor (12);

computing a current rotating angle $\theta_{n+1}$;

computing a voltage output $V_q$;

computing a voltage output $V_d$;

rotating the voltages Vq and $V_d$ by the rotating angle $\theta$n+1 to yield three voltage controlling signals $V_a$, $V_b$ and $V_c$; and

applying the voltage controlling signals $V_a$, $V_b$ and $V_c$ to the permanent magnet electric motor;

wherein a current rotating angle $\theta_{n+1}$ is computed using the current torque T and a preset speed $\omega$ of the permanent magnet electric motor (12) with a formula as follows: $\theta_{n+1} = \theta_n + k_1 \times \omega + k_2 \times T$ (1) where $k_1$ and $k_2$ are constants.